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Helmand Valley

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PROJECT FILE

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### Introduction/Summary

The Helmand Reconnaissance Mission has two purposes. The first is to obtain an updated description of the development situation in the Helmand; the second is to determine what ought to be the next steps taken to further enhance the development prospects of the region. To do this a five man team from USAID reviewed the existing literature on the Helmand and spent 10 days in August, 1978 in the Valley visiting existing and potential project sites, meeting with HAVA officials and other DRA officials, and with the U.S. Soil Conservation Service Team working on the Central Helmand Drainage Project.

The principal conclusion reached by the Mission is that the greatest economic return in the Helmand in the near term will come from improvements in water management, the extension system and agricultural research on already existing lands and from improved farmer access to credit. Yields have stagnated in the middle 1970's and a new infusion of technology is essential to make full use of the infrastructure already in place. Farmer credit availability must increase to allow farmers to adopt new ideas. New area schemes which are at the pre-feasibility stage appear to be extremely costly per beneficiary and their economic return is dubious given present yield realities in the Valley. With a new infusion of technology and credit assured, there are probably some new areas which could be developed at an early stage.

I. History. The extensive ruins of ancient civilizations along the central and southern Helmand River give evidence to the existence of what was once a major and prosperous agricultural society based upon extensive irrigation. Most historians have argued that successive hoards of invaders from the North and West destroyed the large cities and major irrigation canals. What was once a "bread basket" of Central Asia was by the 20th century a vast, barren or scantily vegetated and populated land affected to varying degrees by salts, alkaline and erosion.

The detailed history of the modern agricultural developments in the Helmand Valley has been presented elsewhere. In this section only an outline of the events is presented.<sup>1/</sup>

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1/ Mostly edited from: Lloyd Baron, Sector Analysis: Helmand-Arghandab Valley Region, USAID/Kabul, 1973. Other sources: Louis Dupree, Afghanistan, Princeton Univ. Press, 1973; Lloyd I.Z. Baron, The Water Supply Constraint: An Evaluation of Irrigation Projects and Their Role in the Development of Afghanistan, PhD Dissertation, Dept. of Economics, McGill Univ. 1975; Mildred Caudill, Helmand-Arghandab Valley: Yesterday, Today, Tomorrow, USAID/Bureau of Reclamation, Lashkar Gah, 1969



A. Pre-Project Agricultural Development (1900-1946)

1. Between 1910 and 1914, the Afghans began to develop parts of an old canal system to be known as the Seraj Canal.

2. In 1930 German engineers were called in to assist the repair, improvement and extension of the Seraj Canal.

3. Later in the 1930's Japanese engineers were brought in to improve and extend the old Deh Adam Khan Canal which was later to be called the Boghra Canal.

4. World War II interrupted this project after only 15 kilometers of canal were dug using hand labor.

5. The Afghans continued the work through the war and completed 25 kilometers of canal by 1946.

B. First Period of Heavy Equipment Construction (1946-1960)

1. Between 1946 and 1949 the Afghan government, using monies accumulated through trade in WW II contracted with Morrison-Knudson Afghanistan (MKA) who was to construct:

a) Road improvements between Chaman to Kandahar and Kandahar to Girishk to facilitate movement of equipment, supplies and personnel into the country and to their construction camp north of Girishk;

b) The Boghra Canal with diversion dam to provide water for the Nad-i-Ali and Marja desert tracts; and

c) Major diversion structures on the Boghra Canal and the construction of the Shamalan Canal spur.

2. MKA's second contract (1949-1953), which was financed under an Export-Import Bank Loan, focused on:

a) Remedial construction on problems resulting from previously unanticipated factors; e.g., lining the leaky Boghra Canal, examining drainage problems and farmer mis-use of water;

b) Land development and preparation for settlement;

c) The construction of the Arghandab Reservoir with a storage capacity of 481 million cubic meters/390,000 acre feed; and

d) The construction of the Kajakai Reservoir with a storage capacity of 1.8 billion cubic meters/1,495,000 acre feet.

During this contract period the concept of an integrated Helmand Valley development activity was developed and the autonomous Helmand Valley Authority (HVA) was established. Major land settlement at this time was implemented by HAVA.

3. MKA's third and last contract (1953-1960) was also financed under an Export-Import Bank Loan. During this period:

a) The U.S. Point IV Assistance Program was established to give technical assistance on agricultural matters;

b) Major drainage construction was accomplished in the Marja, Nad-i-Ali, and Shamalan areas;

c) A diversion dam, a canal, and a drainage system were constructed in the Darweshan area;

d) Diversion works and canals were constructed in the South Arghandab and Tarnak areas;

e) A small hydroelectric plant (output = 3000 kw) was constructed on the Boghra Canal, with distribution lines to service Girishk, Lashkar Gah, and Chah-i-Anjir;

f) The Afghan Construction Unit (ACU) was established and given the responsibility for the operation and maintenance of the canals and project roads. This unit eventually replaced MKA;

g) Land development and preparation continued in the Marja and Shamalan areas; and

h) The Tudor Report (1956) was published. This evaluation, undertaken for ICA, examined the engineering accomplishments and the numerous project problems recognized at the time.

C. Period of Study, Planning and Continued Land Settlement (1960-1970). The major highlights of this period were:

1. The arrival of the U.S. Bureau of Reclamation (BuRec) to give technical assistance on drainage, systems design, and maintenance;

2. The continuance of land development and settlement in the Marja and Shamalan areas;

3. The completion of 2 farm-economic studies:

a) I.M. Stevens and K. Tarzi, Economic Analysis of Marja Farms, 1964.

b) I.M. Stevens and K. Tarzi, Economics of Agricultural Production in Helmand Valley, Afghanistan, 1965.

4. The expansion in 1965 of HVA to cover the Kandahar area (HVA henceforth known as the Helmand-Arghandab Valley Authority "HAVA"). By the mid-1960's HAVA was coordinating utilities, education, agricultural research, extension, housing, health, and industrial development for the region;

5. Production figures for Marja and Nad-i-Ali began dropping, and some land was being abandoned by settlers in these areas because of rising water tables, salting, and poor agricultural practices;

6. High yielding varieties of wheat were first introduced in 1967;

7. In 1967 the U.S. Geological Survey studies the rates of silting in the Kajakai Reservoir;

8. Shamalan was selected for an intensive land development project which would focus on areas with the greatest agricultural potential in the shortest time frame. A feasibility study was completed in 1968; and

9. A similar feasibility study was completed for The Central Arghandab Valley Unit by 1970.

D. A Period of Building, Planning and Change (1970-1976). Highlights were:

1. 1970 Farm Economic Survey was completed by G.P. Owens;

2. Shamalan S10.7 lateral and Drain K were constructed, 1971-74;

3. U.S. Geological Survey Team made a limited study of water resources in the upper Helmand Valley, 1971;

4. Flood-control diversions in lower Helmand were studied by IECO in conjunction with the Asian Development Bank, 1972;

5. Major drains were constructed in Babaji area, 1970-72;

6. The USAID/Bureau of Reclamation withdrew from HAVA after land development aspects of Shamalan Project were deemed unfeasible, 1973-74;

7. Kajakai hydro-electric generators were installed and a transmission line was constructed to furnish power to Kandahar, Lashkar Gah, and Girishk;
8. More than 4000 families were settled between 1973-76;
9. Feasibility of a new highway to Iran through Lashkar Gah, Deshu, and lower Helmand was studied by the Asian Development Bank and the right of way was surveyed by an Italian contractor;
10. Land development and reclamation were studied by IECO under the auspices of the Asian Development Bank for Seraj area and lower Helmand;
11. The feasibility of a flood control dam in Khwaja Ali area was studied by the Indian government; and
12. USAID/Soil Conservation Service returned to the Helmand in support of the Central Helmand Drainage Project, 1975.

## II. Current Situation Centered in the Helmand Area.

a) Population. The 1978 settled population of Helmand Province is estimated to be 356,000. Data from the 1975 Farm Economic Survey (FES) indicate that 61 percent of this population are farm owners and their households (217,000 people on 23,085 farms). The urban population of Helmand is estimated to be about 10 percent of the total population. The remaining 29 percent are sharecroppers, agricultural laborers and rural non-agricultural people. Overall, perhaps 80 percent of the province's settled population is directly involved in agriculture.

The 1978 settled population of Kandahar Province is estimated to be 587,000. Of this total about 200,000 (34 percent) are urban. The farm owning population of that area of the province within HAVA's jurisdiction is estimated to be 79,000 on 6,500 farms. Totally, then within HAVA's jurisdiction there are approximately 30,000 farms with a farm population of 296,000, spanning Helmand and Kandahar provinces. Including sharecroppers and farm laborers, the total agricultural population within HAVA's jurisdiction is approximately 435,000 or approximately 3 percent of the country's population.

The following information is derived from the 1975 FES and refers only to the farm owning population of Helmand Province.

b) Farm Size. The mean farm size in the Helmand is 6.92 hectares, 69 percent of which is cropped each year. This is down from the 8.60 hectare mean of the 1970 FES and indicates some fragmentation of holdings.

The median farm size fell from 4.59 hectares in 1970 to 3.82 hectares in 1975. The implied total cropland of the Helmand Valley is 150,000 Ha's with 104,000 hectares under crops in any year. Twenty-three percent of the land under crops is double cropped. Total plantings including double cropping amount to 127,000 Ha's. In 1970 approximately 104,000 Ha's of land were also under crops but with only nine percent of this land double cropped, total plantings were 113,000 Ha's.

c) Cropping Patterns. Wheat and cotton were the principal crops grown in the Helmand in 1975. This represents a major change from 1970 when wheat and corn were the principal crops grown. Moreover in the same time period, there has been a radical shift from local wheat varieties to improved wheat varieties. A summary of cropping patterns in 1970 and 1975 is presented in Table I.

TABLE I Land in Various Crops as Percentage of Total Land Cropped

	First Crop		Double Crop % of Cropped Land 1975
	% of Cropped Land 1975	% of Farmers Growing Crop 1975	
Local Wheat	22	75	28
Improved Wheat	44	6	76
Single Cotton	23	(5)	65
Double Cotton	5.5		25
Corn	13	9	(48)L(7)I
Clovers	3	4	61
Barley, Sesame, Mung Beans	5		Mung Beans
Vegetables (melons)	2	1	17
Fruits	5	5	30
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Farming in Helmand has started to shed its traditional subsistence form. The shift is due mainly to using improved wheat varieties and the use of chemical fertilizers. However, this process still is only in its beginning stages. Wheat was planted on 66 percent of all cropland in 1975. While this is significantly less than the 81 percent of 1970, it still represents a serious misuse of irrigated land from a value-of-production viewpoint. There is perhaps also an opportunity for continued expansion of double cropped areas and movement into triple cropping.

d) Cultural Practices. The use of chemical fertilizer increased rapidly between 1970 and 1975. By 1975 at least 76 percent of farmers used chemical fertilizer compared with 22 percent in 1970. It is estimated that 22,000 MT's of fertilizer were used in 1975 in Helmand. The average application rate of fertilizer on wheat was 83 percent of the recommended rate; for cotton it was 81 percent. Other crops receive virtually no fertilizer. Profit maximizing application rates are not known, the recommended rate being a "best-guess" figure nationwide. Fertilizer usage, while profitable in most areas, is not likely to be close to its optimum.

The expanded use of fertilizer has stimulated the use of credit facilities. Eighty-seven percent of Helmand farmers reported borrowing in 1975. The Agricultural Development Bank was the credit source utilized most frequently with 78 percent of farmers who borrowed (68 percent of all farmers) using this facility. In 1970 only 64 percent of farms reported borrowing only 41 percent of these (26 percent of all farmers) using the HAVA fertilizer credit program then available. This expanded use of credit facilities is an unmistakable sign of a rapidly emerging market orientation among the farmers of Helmand.

This credit usage, however, is for fertilizer only. In 1978, less than three percent of the loans of the Helmand Agricultural Bank were for loans other than fertilizer. Most of these other loans were for tractors. In all less than 50 farmers had loans other than fertilizer loans. As will be noted below, farmers do find credit constraints to be severe.

Tractors, as providers of plow power, have come rapidly to the fore in the Helmand. In 1969 there were less than 100 tractors in Helmand. In 1975 there were over 1000. The FES estimates indicate that 45 percent of farmland is now tractor plowed. This figure is considered low by HAVA officials.

e) Farmer Problems and Attitudes. Major agricultural problems perceived by Helmand farmers were in descending order of frequency, (a) poor drainage/salting; (b) inadequate irrigation water; (c) lack of equipment/oxen; (d) lack of finances or credit, and (e) the high price of chemical fertilizer. Between 1970 and 1975 drainage/salting problems seem to have become more severe in the minds of farmers while there was a reduction in the number who felt they had insufficient water. The lack of equipment/oxen and high price of fertilizer was also perceived as a far more serious problem in 1975. While financial problems as such were seen as less serious in 1975, financial problems are closely related to lack of equipment/oxen and the high price of fertilizer. It may be that in 1975 farmers simply articulated the physical nature of the problem and not the financial. In fact as noted in the next paragraph financial problems do appear to be a major constraint.

Farmers in general (90 percent) believed that their net farm income could be increased through the following ways: (a) using more commercial fertilizer; (b) using more and better equipment; (c) through land improvements and (d) through an improved water supply. When asked to explain why such improvements were not made, 93 percent responded that financial constraints prohibited making changes. Overall then there is a strong indication that insufficient credit is a serious constraint for increasing farmer incomes.

Agricultural Yields/Production.

Agricultural yields in the Helmand while reasonably high by nationwide standards are still low in absolute terms. More importantly, while yields of the major crops of wheat, corn and cotton increased dramatically between 1963 and 1970, that growth substantially slowed between 1970-1975. In fact improved wheat yields fell, cotton yields stagnated and corn yields fell dramatically. (Tables II and III present yield comparisons.)

The yield stagnation notwithstanding, there was a significant increase in total production in the Helmand between 1970 and 1975. Wheat production increased from 72,000 MT's to 110,000 MT's (four percent of national production). Cotton production increased from 6,000 MT's to 30,000 MT's, (19 percent of national production). Corn production remained constant at 15,000 MT's (two percent of national production). In 1975, 70,000 MT's of clovers were grown compared to 56,000 MT's in 1970. These gains in total production between 1970 and 1975 derived from a switch from local to improved varieties of wheat, through a significant expansion of cotton plantings, and through more double cropping - not through yield improvement or expansion of total area planted.

There is a major discrepancy between FES wheat production estimates and HAVA Extension Service estimates. FES wheat production was 110,000 MT's; the Extension Service's 150,000 MT's. One possible explanation is that Extension Service samplings are not random. The cuttings may be taken from better parts of fields. Also Extension agents may tend to over-estimate for bureaucratic reasons. On the other hand, farmers may deliberately under-estimate production for fear of taxes, anti-hoarding problems, etc. Cotton production estimates were similar; farmers do know what they produce.

Net farm income in 1975 averaged 46,682 afs or \$833 (at the then existing exchange rate of afs 56/\$1.00). This amounts to \$89 per capita.<sup>1/</sup> Median

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<sup>1/</sup> If one uses the Extension Service wheat production figure, per capita income would increase to \$111.

Table 2 Average Total Yields and Range of Yields by Area of Important Crops in the Helmand - 1970 and 1975  
(Metric Tons/Hectare)

<u>Crop</u>	<u>Yield</u>		<u>Range</u>	
	<u>1970</u>	<u>1975</u>	<u>1970</u>	<u>1975</u>
Wheat (L)	.76	1.03	.37-1.49	.58-1.51
Wheat (I)	2.32	1.89	1.75-2.94	1.05-2.29
Cotton (S)		1.07	.79-1.38	.48-1.45
Cotton (D)	1.03	.64		.42-1.17
Corn (L)	1.56	1.19	.81-3.05	.50-1.50
Corn (I)	2.34	1.13	2.08-3.68	.47-1.80
Mung Beans	.70	.42		.28- .57
Barley	.43	.75	.23-1.87	.25-1.33
Clovers	15.2	21.20		9.38-26.37

Table 3 Total Helmand Production of Crops in 1970 and 1975  
('000's of Metric Tons)

<u>Crop</u>	<u>1970</u>	<u>1975</u>
Wheat	72	110
Corn	15	15
Cotton	6	30
Clover	56	70
Mung Beans	3	
Barley	1	
Grapes	15	

Table 4 Average Crop Yield by Area in 1963 and 1970

<u>Crop</u>	<u>Area</u>	<u>1963</u>	<u>1970</u>
Wheat	Nad-i-Ali	.17	1.40
	Marja	.41	1.19
	Shamalan a/	.94	1.51
	Darweshan a/	.71	.95
Corn	Shamalan	1.20	1.89
	Darweshan	.61	1.80
Cotton	Nad-i-Ali	.14	.86
	Marja	.26	.83
	Shamalan	.53	1.27
	Darweshan	.18	.90

a/ Wheat and Barley combined.

owner income was 27,118 afs (\$493) or \$52 per capita. Per capita net domestic product in 1975/76 was afs 7,553 or \$135. The absolute rural poverty line in 1975/76 was estimated at \$77.91 per capita. Thus 60 percent of Helmand's farm owner population was below this level.

Average net farm income in 1970 was fas 25,976 (\$306) or \$32 per capita. In real terms per capita farm owner income grew at 8.9 percent per annum over the 1970-75 period if measured in Afghanis. In dollar terms the real increase was 18.9 percent per year. In 1963 (using 1975 weights) net farm income was afs 4300 (\$84) compared to 32,907 (\$397) for the same areas in 1970. In 1975 these areas had afs 45,522 average (\$892) farm income.<sup>1/</sup> On a per capita basis incomes from 1963 to 1970 to 1975 rose from afs 582 (\$11) to afs 3739 (\$43) to afs 5232 (\$103). In real terms per capita income from 1963 to 1975 grew 11.9 percent p.a. if measured in afghanis and 12.2 percent p.a. if measured in dollar.

These income increases over the past 15 years in the Helmand are very impressive. It must be remembered, however, that income is still very low absolutely with 60 percent of farm families falling below the IBRD absolutely poverty line. No doubt sharecroppers and agricultural laborers have even smaller incomes.

III. AID Target. The obvious first target for AID in the Helmand are the sharecroppers and casual laborers whose income are almost certainly below that of farm owners. Little is known of these people except that they do not have access to land or non-agricultural employment and that the total population of families in these categories is probably on the order of 100,000 or 23%.

Helmand farm owners constitute the second best but still highly acceptable target group. Their incomes are well below the national average and 60 percent fall below an absolute poverty line for Afghanistan.

To reach the landless in Helmand, two things could be done directly - provide land or expand permanent non-farm employment. Provisions of land could be made through the expansion of the irrigation system. Non-farm permanent employment in the Helmand could best be achieved through processing of agricultural commodities. It will be argued in the next section, however, that neither the land expansion schemes nor agricultural processing operations should take first priority. A better groundwork must

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1/ The 1963 FES did not include off-farm income. When comparing to 1963, the 1970 and 1975 figures also exclude off-farm income.

be laid before either of these permanent approaches can prove viable. The groundwork involves working directly with the present farmers of Helmand to increase their productivity. This is the "second best" group. In working with this group, however, the priority target group will be indirectly affected since the pre conditions for meaningful programs for the landless will be established. As long as the groundwork is being laid there is no reason to prevent expansion of the irrigation system into new areas from being undertaken simultaneously. This would accelerate the process of reaching the first priority target group and could provide immediate interim employment in expansion of the system used labor intensive construction techniques.

IV. Recommended Course of Action. For convenience of discussion possible project interventions have been aggregated into four groupings: (1) projects consolidating and expanding gains in existing areas; (2) studies; (3) infrastructure projects; (4) new lands development. The following recommendations are made in terms of ordering budget allocations, rather than necessarily in chronological order. That is, projects with lower priority could begin simultaneously with higher order projects as long as the higher order projects were undertaken.

a) Consolidation/Extension of Gains in Existing Areas

It is the unanimous opinion of the AID reconnaissance team and the SCS drainage advisory team that consolidation and expansion of gains in existing areas should receive highest priority. A quick summary of the situation in the Helmand will help explain this choice. Farmer incomes are very low even though they have risen rapidly over the 1963-1975 period through increases in production. Increases in production have occurred through an expansion of double cropping, through massive changes from local to improved varieties of wheat and from an expansion in production of a profitable cash crop - cotton. Yields have stagnated or have fallen. The possibility of further double cropping is constrained by on-farm water availability. The switch from local to high yielding wheat varieties is virtually complete. Cotton is already grown by two-thirds of all Helmand farmers. The point has been reached where farmers know as much as the extension service. There has been no new infusion of new, adapted technology to extension/research for seven years. Continued income gains from the existing system are thus improbable. (See draft working paper I.)

Farmers perceive that their incomes could increase. The major problems preventing this include drainage/salinity and lack of water, lack of equipment/oxen and expensive fertilizer. All are to one degree or another linked to financial constraints which is perceived as a major farm problem. Farmers do not often acknowledge cultural practice constraints most likely

not because they feel they do everything properly but because of ignorance.

Finally, there is the problem of incentives. While Helmand farmers are very poor they are for the most part not true subsistence farmers. Discretionary income does exist. At this point in development, where basic survival requirements are met with some to spare, further expansion of incomes is threatened by lack of consumer incentives. The greatest incentive-survival is being met. The marginal utility of further income thus declines markedly. At the same time, the work and concentrated effort required to expand income increases. Switching to HYV is relatively easy. Row planting, proper water control, weeding, etc. are harder. Utility of income falls and cost of earning income rises. Hence other consumer incentives are necessary to raise the marginal utility of income.

The outcome of all this is the hypothesis that incomes are likely to stagnate in the existing areas of the Helmand. Technical, financial and incentive problems are the critical factors.

To describe the steps involved in consolidating and expanding gains made in existing areas, three modules will be discussed. They are not necessarily mutually exclusive or discrete but are linked together. Hopefully, they can be done individually (though a particular sequence); that is, if only the work of the first module is undertaken, it can stand alone technically, economically, socially and financially. The three modules in sequence are: (1) water management; (2) extension; (3) research.<sup>1/</sup>

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1/ Research and extension modules are meant to include animal husbandry.

The first priority for AID should be water management (see draft working paper II). The water problem simplified is that farmers do not apply proper amounts of water on crops at proper times. This is due to ignorance, lack of water and physical problems of the land. The only technical prerequisite that must be included in the module is a water study to know the capacities of the irrigation system and the water requirements of each outlet from the system (perhaps this will require one man year TA). Project design should start with the on-farm water problems and work upward to see what approach should be used (see draft working paper III). It is clear that ignorance can be addressed through extension, lack of water problems through education and some changes in the water delivery system (from the water study) and physical land problems partly through extension but also through credit.

Some possible plans of attack include a water management or irrigation institute and water user associations. Credit priorities should include expanding the actual - not theoretical - lines of credit open to farmers both for technical improvements such as land levelling and for consumption (preferably desirable goods) to expand incentives. (See draft working paper IV.) Consideration should also be given to a partial forgiveness clause for farm improvement loans.

The total cost of this module if significant finance for credit is included could reach \$20 million.

Module 2 is the upgrading of the extension service to again have significant knowledge on cultural practices to impact the farmer and a response capability to assist farmers when major problems such as pest infestations occur (see working paper V). This is clearly linked to module I as better water management will already rely heavily on extension and as an improvement in water availability will create many new possibilities for raising incomes through increased yields and new cropping patterns. Yields will be enhanced through improved cultural practices. The knowledge of practices and new cropping rotations would come from extension. Again the actual project design should begin with on-farm problems and work upward. One possibility to be considered would be expanded formation of co-ops as the link between extension and the farmer. Total cost of this module might be \$5-10 million.

Module 3 research - is clearly linked to module 2. (See draft working paper VI) Research is required to provide information inputs to extension in order for extension to disseminate optimal instructions for the farmer. Costs of this module could approach \$10 million.

Overall, costs of accepting the full grouping of projects could be in the range of \$40-50 million over, say, a five year period. It is not inconceivable that the results would double farm output and more than double

net farm income - a value of production of perhaps \$60 million per year.

b) Studies

The second group of projects are studies necessary for rational planning of long term development in the Helmand. These studies include a soil and water survey, photo reconnaissance of the Helmand, an irrigation/road master plan and sedimentation studies of Kajakai reservoir. There is no doubt about the need or value of the studies. The crucial question is whether they would be used. If AID and other donors were to envisage a major long term commitment to the Helmand, then the studies should be undertaken as soon as possible. Without the possibility of major long term assistance, the likelihood of the Government of Afghanistan making good use of the studies is not great. Given current uncertainties it would seem that consideration of such studies should be postponed.

c) Infrastructure

The infrastructure grouping includes roads, rural electrification, Lashkar Gah water supply and industrial projects. Road projects include the paving of the Lashkar Gah/Russian Highway road and an extension of the farm/market network in the Helmand. We still have very little information on roads in the Helmand and more will be needed before a final determination of their importance can be made. With the evidence at hand, roads do not seem to be an overriding problem in the Helmand. The need for pavement of the Lash/Russian highway road seems to arise more for bureaucratic comfort than from a real constraint to marketing. The farm/market network appears to be adequate (HAVA has responsibility for over 3,000 kms of roads) and marketing problems were not an important complaint of farmers in the FES.

Rural electrification seems to offer real possibilities for AID involvement. (See draft working paper VI.) It is estimated that up to 85 percent of the farm population of Helmand would willingly hook into a network. Major benefits would occur environmentally as pressure on combustible vegetable matter would lessen (though early uses of electricity would mostly be for lighting). Electrification would open up many consumption possibilities for heating, cooling, refrigeration etc. This could have a major incentive impact. There could also be a nutritional impact over time as the possibility of refrigeration would increase food shelf life. Electrification is also often positively correlated with reduced birth rates. The only problem at this point with electrification is the lack of power availability. Asian Development Bank is planning in a two phase project a further expansion of generation capacity at Kajakai. When finished power will be available. This would make a good FY 82/83 project.

The non-agricultural industrial projects such as the ice plant and potable water supply system for Lashkar Gah have been ruled out on mandate grounds. They were not seriously investigated by the team.

Agricultural processing offers interesting possibilities to raise not only farm incomes but to provide employment to the highest priority target groups. (See draft working paper IX for a discussion of possible projects.) The problem with processing projects is that the pre conditions do not currently exist for most of them. Helmand farmers grow wheat and cotton primarily. They are already processed as far as practicable in the Helmand. To get into other areas will require that the modules recommended for action are actively implemented. Concentrated research and extension are a pre-requisite to these processing projects. They should follow naturally as a second stage to the consolidation of existing gains.

d) New Land Development

New Land Development would be directed at AID's priority target group but under present circumstances there are severe drawbacks to possible projects. These problems include: (1) very high costs per beneficiary (these range from \$10,000 - \$20,000 or more per family); (2) to keep costs within these bounds implies quite small farms (four hectares) on land that is marginal. Marginal land for marginal people may not make a very sound strategy for our target group; (3) the economic feasibility of the proposed projects will be very low if expected benefits through increased production are based on current Helmand yields levels. These projects will become more feasible as the recommended course of action raises yield possibilities; (4) the HAVA/HCC capability in this area is already stretched to its limits. (See draft working paper X.) With the big (\$60 million) Seraj canal project in its feasibility stage by ADB there will be a further major workload added to HAVA/HCC; (5) there are also questions of the technical feasibility of some projects. Some soils may just not be reclaimable; water may just not be available. (See working paper XI.) This is further clouded by the new problems of riparian rights with Iran.

If all of the recommended courses of action are adopted, some of the above problems would be alleviated and certain projects could become feasible. The most likely candidate seems to be the West Kajakai project although the team would recommend an expanded version of the project contained in the IECO report. This would require further pre-feasibility work. This area's farmers appear to have the best cultural practices of any in the Helmand, the soil appears good, and it is a relatively poorer area of as the farm sizes are very small. This project could proceed simultaneously with the recommended course of action providing adequate funding were available.

e) HAVA's Perceptions

There will be perhaps serious conceptual problems with undertaking the recommended course of action. HAVA does not perceive the Helmand's problems in the same light as we do. They have already parcelled out land without access to water in Lower Darweshan. To them new area development is an urgent problem. Improvement of the amenities in Lashkar Gah are natural desires on the part of civil servants assigned there. The following is a list of projects, supposedly in order of priority, that HAVA would like to see implemented.

- (1) Lashkar Gah water and sewer project; (2) Deshu road;
- (3) Lashkar Gah Shamalan development project (new land); (4) Lower Darweshan; (5) Seraj land development; (6) O&M support for irrigation and roads; (7) Marja forest conversion to farms; (8) state olive farm; (9) abattion; (10) training program for Lashkar Gah hospital doctors; (11) civil servants' housing; (12) upper-Kajakai and upper Arghandab dams; (13) Central Arghandab drainage; (14) strengthening of audio-visual capability of HAVA; (15) rural electrification.

Since there is a different perception of needs, the DRA should be consulted very early and continuously on future project plans.

Finally, the following Table presents a capsule summary of the various project ideas and criteria which could be used to order them.

